

AD No. 11138
ASTIA FILE COPY

11 138
Duplicates
DIRECTOR
Office of Naval Research
1000 Geary Street
San Francisco 9, California

Low Pressures Research
College Avenue Pool
Institute of Eng. Research
University of California
Berkeley 4, California
April 24, 1953
E14
Feb

MONTHLY STATUS REPORT - MARCH 1953

Contract N7-onr-295-Task 3
Project Number NR 061-003

Dear Sir:

Progress on the contract for the month of March has been as follows:

1. Traverses of a molecular beam reflected from a steel surface are continuing. Glass and single-crystal specimens are being mounted preparatory to further tests. Previously collected data are being reduced and analysed concurrent with the present tests.
2. During the month of March two programs made use of the No. 3 Wind Tunnel. The first portion of the month was devoted to a program of developing and testing free-molecule flow hot wire probes designed for this flow system. These probes will be used in an investigation of the structure of a shock wave, a program sponsored by the National Advisory Committee for Aeronautics. The remainder of the month was devoted to an investigation of drag forces on conical bodies in a low density supersonic air stream. The forces were measured with a single component drag balance utilizing a Wianko force sensitive element. These tests will continue using various cone lengths and angular configurations.

During the month of March it was noted that the No. 3 Wind Tunnel had now been used for 400 runs. Examination of the history of this equipment reveals that the number of runs per year has increased from approximately 70 to 125. An analysis based on the number of working days in the year minus time for maintenance and repair indicates that the project completes a run every other day. Considering the growing complexity and diversity of programs now under way, it is difficult to see where this performance can be improved. The time required for model mounting, nozzle and instrument changes, calibration, etc., becomes an increasingly important factor in a rapidly changing program. Parallel with this increased tunnel activity it should be noted that the project

April 24, 1953

is also producing an increased number of reports. At the present time, approximately 18 reports are being issued each year compared to 12 per year issued in the early days of this program.

3. Shop work on the new rotating cylinder balance is virtually complete. Components of this system are partially assembled and vacuum testing of the structure is under way.
4. The following reports are in various stages of preparation:
 - (a) A report describing the design and operational tests of the rotating cylinder equipment for use in low density gas dynamics research has been completed and is being reproduced.
 - (b) A report describing base pressure studies using cone-cylinder models is being prepared.
5. The following report was issued in March: HE-150-112, "Vacuum Facilities for the Study of Supersonic Flow", by G. J. Maslach, reprinted from the Chemical Engineering Progress, Vol. 48, No. 12, December 1952.
Abstract: This report describes the aerodynamic test equipment designed by this project to simulate high altitude flight conditions. Emphasis is placed upon the vacuum techniques that have permitted the construction and operation of large-scale low density flow systems. The problems of achieving precise pressure measurements in these vacuum conditions are also discussed.

Very truly yours,

S. A. Schaaf

S. A. Schaaf
Faculty Investigator

SAS:ds:11

cc: 1 ONR San Francisco

3 ONR Washington, D.C.

2 OSR, Fluid Mechanics Branch
Research and Development Command
P. O. Box 1395, Baltimore, Md.

1 Dr. Morton Alperin
Hdqrs ARDC
P. O. Box 2035
Pasadena 2, Calif.